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ABSTRACT

A study examined instructional television (ITV) to determine the differences in the affect domain existing among three concurrent environments: the face-to-face environment, defined as the site from which the message originates; the on-site location, defined as a location in close proximity to the origin of the message; and the off-site location. Interviews and observational data were collected from both students and professionals enrolled in mechanical engineering courses offered through the PROFNET televised instruction system at San Diego State University during the spring semester of 1989. The face-to-face and on-site settings involved 28 students each, while the off-site classroom included seven participants. Results revealed that five differences did exist in the affect domain between face-to-face sites and mediated sites in ITV: (1) the way in which questions and comments were generated and utilized; (2) the presence of humor; (3) entrance and leave-taking behaviors; (4) the reaction of the observed groups to the content of the message; and (5) the focus of attention of the observed groups. More research into the importance of immediacy, affiliativeness, identification, and other related affective constructs appears to be called for. (Thirty references are attached.) (KEH)

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# A Comparative Analysis of Mediated Instruction: An Exploratory Study

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## Abstract

Given the prior research attesting to the equivalency in effectiveness between face-to-face instruction and televised instruction in terms of cognitive learning, this study examines the differences in affective learning between the two mediums. Specifically, the authors explored the differences in the affect domain existing between three concurrent environments: the face-to-face environment, an on-campus location, and the off-campus location. The subjects for this study were comprised of both students and professionals enrolled in PROFNET courses at San Diego State University during the Spring semester of 1989. Through the use of naturalistic observations, structured interviews, and the survey technique, accumulated data would seem to suggest that certain elements of the affect domain do indeed differ between the three observed settings. The findings suggested differences in five areas: (1) the way in which questions and comments were generated and utilized; (2) the presence of humor; (3) the entrance and leave taking behaviors; (4) the reaction of the observed groups to the content of the message; and (5) the focus of the attention of the observed groups.

## Introduction

Television has been educating students for over 30 years, but only within the past 15 years has it gained widespread acceptance as a method of formal instruction (Zigerell, 1984). Television, in combination with other technological advances, now offers many advantages for educators interested in reaching long distance students through televised instruction. For example, at Illinois Institute of Technology (IIT) a number of degree programs in business administration, engineering, and computer science are offered, via a closed-circuit network, at seven remote sites within a 40-mile radius of Chicago. This network has been able to expand IIT's enrollment and attract competent students, many of whom work full-time (Bloom, 1984).

Similarly, for several years, SDSU's College of Extended Studies has provided televised courses to local industry personnel by means of the PROFNET Instructional Television Fixed Service (ITFS) microwave system. These courses in engineering, computer science, psychology and business are taught in specially-equipped classrooms designed for live transmission to companies throughout San Diego County.

Instructional Television (ITV) reaches many people unable to attend classrooms because of geographic location, time limitations, or lack of resources. However, the benefits gained by the use of ITV may be somewhat undercut by the absence of the interpersonal elements present in traditional instructional (face-to-face) settings. Although research has shown that ITV is as effective as traditional instruction (Chu & Schramm, 1967) in importing cognitive information, the research has failed to consider the affective differences between ITV and face-to-face instruction. This study will directly examine differences in affective learning between face-to-face, on-campus, and off-campus locations.

Face-to-Face and Televised Instruction

Numerous studies have been conducted on the effectiveness of televised instruction as compared to face-to-face instruction. Luskin (1983) commented that "the literature is replete with studies on mediated instruction and telecourses, and the research bears out their effectiveness" (p. 60). Though studies have validated televised instruction as effective, the focus of these studies has been on the effectiveness of cognitive learning as measured by achievement, knowledge gained, test scores, or grades .

Schramm's (1962) examination of approximately 400 quantitative studies comparing instructional television and classroom teaching is one of the most cited works in support of a "no difference" hypotheses. Schramm concluded that "the average student is likely to learn about as much from a TV class as from ordinary classroom methods,...the over-all verdict has been , 'no significant difference'" (p. 156). Similarly, Chu and Schramm's (1967) indepth analysis of 207 studies that measured how well students learn by television concluded that there is no significant difference in learning between traditional instruction (face-to-face) and televised instruction.

Various researchers conducting studies and analysis on this issue have yielded similar results (see Asheim, 1962; Dreher & Beatty, 1958; Dubin & Traveggia, 1968; Dubin & Hedley, 1969; Jamison, Suppes, & Wells, 1974). Luskin (1983) noted that in *A Public Trust,* the report of the Carnegie Commission on Public Broadcasting, "sufficient research has been conducted and the issue with regard to effectiveness has now been authoritatively documented" (p. 60).

Although research has failed to isolate significant cognitive differences attributable to ITV, this finding does not suggest that ITV is equivalent to face-to-face instruction for all types of learning. Thus, it is incumbent upon ITV

researchers to further investigate learning outcomes from a more broadly conceived notion of learning. Learning is more than the short term acquisition of cognitive information.

Domains of Learning

Bloom (1956) developed a learning taxonomy that has been widely accepted to suggest that learning has three components: cognitive domain, affective domain and psychomotor domain. The cognitive domain deals with the recall or recognition of knowledge and the development of intellectual abilities and skills. This domain is concerned with an individual's ability to recall knowledge, comprehend, apply, analyze, synthesize and evaluate. Since this domain is obviously vital to learning, educators in general have tended to focus research in the cognitive domain. Thus, it is not surprising that this domain has been the sole focus of ITV research.

The affective domain deals with changes in interests, attitudes, values, appreciations and emotional sets or biases. The affective domain is concerned with receiving (attending), responding, valuing, organizing, and characterization by a value or value complex (Krathwohl, Bloom & Masia, 1964). Krathwhol, Bloom and Masia (1964) discussed this domain as an increasing internalization of positive attitudes toward specified content.

The psychomotor domain emphasizes some muscular or motor skill, some manipulation of material and objects, or some act which requires a neuromuscular coordination. Although educators recognize the importance of this domain, they have found this domain is more applicable to courses dealing with handwriting, speech, physical education, trade, and technical skills (Krathwol, Bloom & Masia, 1964).

Krathwol, Bloom, and Masia (1964) point out the importance of how the

domains are reliant upon each other for achieving the maximum learning objectives. They stated:

> Each affective behavior has a cognitive behavior counterpart of some kind and visa versa. An objective in one domain has a counterpart in the opposite domain, though often we do not take cognizance of it....Each domain is sometimes used as the means to the other, though the more common route is from cognitive to the affective. Theory statements exist which permit us to express in terms of the other and visa versa. (p. 62)

This statement is vital to the study of ITV and its comparison to face-to-face instruction because it supports the notion that cognitive behavior must be studied in conjunction with affective behavior. Unfortunately, in most investigations of learning outcomes, the affective domain has been ignored. Hunt (1987) noted that educators have focused a considerable amount of research on the cognitive domain, and the affective domain has been largely ignored. Andersen and Andersen (1982) stated that "although most educators would subscribe to the importance of the affective domain, little attention has been focused on the specific methods for improving affective outcomes" (p. 99).

Furthermore, affective outcomes are important in their own right. Hunt (1987) concluded that the affective domain is as equally influential for student's learning gain and achievement as the cognitive domain. Some researchers even claim that affect is the precursor to better cognitive learning (Kash & Borich, 1978). Bloom (1976) asserted:

> Where students enter a learning task with enthusiasm and evident interest, the learning should be much easier, and, other things being equal, they should learn it more rapidly and to a higher level of attainment or achievement than will students with lack of enthusiasm and evident interest. (p. 74)

Finally, Ripple (1965) suggested that the way in which a student and teacher feel about the classroom environment can either facilitate or obstruct the goals of the instructional setting.

Limited research in ITV has attempted to address the affective domain of learning by examining the attitudes of students and faculty, but this research has been directed towards the use of the medium rather than towards measuring learning outcomes. Chu and Schramm's (1967) study summarized some conclusions that are implicitly related to the affective domain:

- Teachers and pupils are more favorable toward the use of ITV in elementary school than in secondary school and college (p. 112).
- At the college level, students tend to prefer small discussion classes to television classes, television classes to large lecture classes (p. 119).
- Favorable attitudes are distributed widely enough among different televised courses to cast doubt on the assumption that some academic subjects, per se, may be disliked as material for ITV (p. 120).
- There is evidence of a Hawthorne effect among students beginning to use ITV, but no firm evidence that attitudes toward the medium necessarily improve or worsen with time (p. 122).
- Liking ITV is not always correlated with learning from it (p. 123).

Similarly, Dubin and Hedley (1969) found in their comparison of 191 studies of ITV at the college level, a slight, but statistically significant difference in favor of attending classes with traditional instruction rather than televised instruction. In their study of a televised graduate engineering course, Wergin, Boland, and Haas (1986) found no significant difference in cognitive learning, but they stated that "instructional technology has a human cost in the form of decreased opportunity for personal interaction between student and instructor" (p. 111). Barron (1987) also found in his study of the perceptions of students and faculty

using televised instruction, that students would prefer the contact of peers, as well as instructors, in a more traditional classroom. Barron concluded that, "Not everyone enjoys it [ITV] or is totally convinced that it is as good as the traditional classroom, but so few data are available for comparison, they concede to its value" (p. 270). A direct test of the affective domain would be a valuable method to further investigate ITV's effects.

## Immediacy

Immediacy theory provides an explanatory framework to understand and predict differences in affective learning between ITV and face-to-face instruction. Mehrabian's (1981) immediacy theory is based on the premise that "people seek out and get more involved with things they like and they try to minimize their relationships with things they dislike or fear" (p. 141). Immediacy behaviors are approach behaviors which signal availability for communication, increase sensory stimulation and produce interpersonal closeness (Andersen, Andersen & Jensen, 1979; Andersen, 1985).

Immediacy is reflected in the form of verbal and nonverbal behaviors. These behaviors are communicative behaviors that enhance closeness and reduce distance between individuals. Verbal immediacy behaviors are communicated through sentence structure and word choice, such as pronouns, tense, or words that refer to objects (Wiener & Mehrabian, 1968). Nonverbal immediate behaviors are observed by the gestures, eye contact, touching, head and body position, open and relaxed postures, vocalics, chronemics, proxemics, and interaction synchrony and congruence (Andersen, Andersen and Jensen, 1979; Andersen, 1985; and Mehrabian, 1981).

Specifically related to the instructional environment, Andersen (1979) suggested that instructor immediacy behaviors could be manifested by an

instructor who:

> maintains closer physical distance, communicates on the same spatial plane, is not in front or behind the other interactant(s), touches, uses direct body orientation, is relaxed, uses overall purposeful body movements, gestures, engages in positive head nods, smiles, uses eye contact, spends time with the other interactant(s), interacts and allows other person to interact, dresses informally, and is vocally expressive. (p. 545)

Interestingly, in their research of ITV, Wergin, Boland and Haas (1987) recommended that instructors must maintain a comfortable classroom atmosphere by maintaining eye contact (not just with the camera lens), practice with the microphone to encourage classroom discussion, promote interaction between on-campus and off-campus classrooms, allow time for discussion at the end of the class for students off-campus, and not to rely exclusively on in-class TV monitors to present material. These recommendations implicitly recognize the potential of immediacy behaviors in ITV.

Research has also found a relationship between instructional immediacy and affective learning. Andersen (1979) concluded in her study that immediacy was a predictor of teaching effectiveness, student affect, student behavioral commitment, and solidarity. However, it should be noted that no relationship was found between teacher immediacy and cognitive learning. Efforts to establish other immediacy variables in instruction can be found in various research studies. Results have indicated that there is a correlation between teacher communicative behaviors and affective learning (Andersen, Norton and Nussbaum, 1981); a positive relationship between student affective, behavioral, and cognitive learning and three levels (low, medium, and high) of student/teacher solidarity (Nussbaum and Scott, 1980); and a positive relationship between teacher immediacy and affective learning in both people-oriented

classes and task-oriented classes (Kearny, Plax and Wendt-Wasco, 1985).

Finally, research related directly to this study has been conducted by Withrow and Andersen (1980). They reviewed seven constructs related to immediacy and their role in mediated instruction. They operationalized nonverbal expressiveness as a combination of warmth, inclusive behaviors, enthusiasm, communicator style, general nonverbal behaviors, teacher awareness programs and immediacy. Using a televised videotaped lecture, Withrow and Andersen tested the effect of perceived nonverbal expressiveness of an instructor on affective, behavioral, and cognitive learning. Results indicated a positive effect on the subjects in regards to affective learning. However, nonverbal expressiveness was not found to be a predictor of behavioral or cognitive learning. The authors concluded that lecturer nonverbal expressiveness is a potentially significant positive factor in improving instructional effectiveness, particularly in the affective domain. The effort to extend the significance of the affect domain in televised instruction serves as the purpose for this study.

## Purpose of the Study

Based on the foregoing body of literature, immediacy appears to be an important aspect to effective instruction and affective learning. Studies have generally found a positive relationship between teacher immediacy and teaching effectiveness (Andersen & Andersen, 1982). Although the body of research in ITV has shown that there is no significant difference in the amount of cognitive learning, there is reason to believe that there is more to learning than just cognitive information. Schramm (1977) cited Cronbach's (1975) discussion about the research conducted on ITV stating that, "Beyond the interactions observed or thought to be controlled in the experimental design, there are very likely to be higher level interactions" (p. 40).

Research has also found that students' attitudes toward televised instruction vary depending on the location of the classrooms. Chu and Schramm (1967) noted that voluntary home students of televised college classes tend to be more favorable toward learning by television than are the students who take these same televised courses in the classrooms. A possible reason for Chu and Schramm's findings was offered by a survey undertaken in Australia at the Open College of Further Education (cited in Faibisoff & Willis, 1987). This survey indicated that the students enrolled in the distance education program were motivated by commuting costs, work or home schedules, and personal preference for independent study. Luskin (1983) supported these findings citing that research shows that students take telecourses as a matter of preference for variety or for convenience. Additionally, Chu and Schramm (1967) found that students will learn more from ITV under motivated conditions than under unmotivated conditions.

This study will examine one of the possible higher level interactions that may show a significant difference in ITV. Specifically, this exploratory study will examine the differences in the affect domain existing between three concurrent environments: the face-to-face environment, to be defined as the site from which the message originates; an on-site location, defined as a location in close proxemity to the origin of the message; and the off-site location.

Research Question

Given the prior research attesting to the equivalency in effectiveness between face-to-face instruction and televised instruction in terms of cognitive learning, it is not the intent of this study to enter into the debate involving the superiority of one dimension over the other. Rather, the following research question will be posed for the purposes of this exploratory study:

RQ: What are the affective differences existing between the three concurrent environments in ITV?

## Methodology

### Subjects

The subjects for this study were comprised of both students and professionals enrolled in PROFNET courses at San Diego State University during the Spring semester of 1989. The observational data and interviews relevant to this study were collected from subjects who were enrolled in a mechanical engineering course being broadcast during the Spring semester; the balance of the data was collected from similar off-site courses offered through PROFNET. Both the face-to-face and on-site environments were located on the grounds of the university; the off-site course was conducted in a meeting room at a large organization.

### Observational Settings

The first setting observed was the face-to-face environment. This environment consisted of the instructor of the class, the cameras necessary to transmit the message through the medium, and 26-28 PROFNET students. The room was set up similarly to that of a traditional classroom with the exception of three large television monitors: one located in the front of the room, one located to the side of the room, and the third monitor used by the instructor to provide visual feedback. There were no phone lines necessary due to the instructor's immediate presence.

The second setting observed was the on-campus site, which received the same

message as broadcast from the first setting. This setting was located in close proxemity to the face-to-face setting, and served as an overflow room for approximately 26-28 PROFNET students. The room was set up similarly to the face-to-face site, consisting of three television monitors: two located in the front corners of the room and a third monitor was centered in the rear of the room. This on-campus site offered a telephone system for the purpose of these students to call in any of their questions or requests for clarifications. The phone was located at the front of the room under a television monitor. Unfortunately, movement was restricted due to the seating arrangement of the room.

Concurrently, the televised instruction was received by a number of off-site classrooms. The third observed setting was at a major business corporation located off-campus in North San Diego county. The particular classroom observed consisted of 4-7 students in a small office, approximately 10' x 10'. A single television monitor was located at the front of the office. Normal classroom desks placed closely to each other created a cramped environment. The telephone system was located within reach of all students, making it easily accessible for the students to call in questions to the instructor at any time.

## Procedure

The procedure used to gather the data for this study utilized multiple methods to obtain the desired information. The initial process of data collection consisted of the analysis of PROFNET feedback evaluations (n=84) from the off-site locations. Each questionnaire consisted of 187 variables in which the respondents were asked their opinions on various aspects of the PROFNET program utilizing a five-point Likert scale (ranging from "strongly agree" to "strongly disagree") with a "not applicable" option. The respondents were then asked to rate each of the separate questions as being either of high, medium, or low importance to the

overall program. These questionnaires were analyzed to determine the general reactions of the respondents to various aspects of PROFNET, and to gauge their satisfaction with the program.

The second phase of the procedure involved limited pilot interviews conducted in each of the observed settings. The interviewees were selected at random and guaranteed anonymity. The assigned observer in each environment conducted two such structured interviews in an effort to: (1) substantiate relative consensus of the questionnaire data with respect to the on-campus and face-to-face environments; (2) provide insight into the formation and behaviors of each of the pre-established environments; (3) identify possible perceived differences in the affect domain between the three sites; and (4) provide additional research support for the authors' tentative conclusions.

The final stage of data collection involved the concurrent observation of the face-to-face site, on-campus, and an off-campus location of one particular PROFNET course over a two week period (the course met once a week for one hour and 15 minutes, hence two class meetings were observed in their entirety). The observer at each site noted perceived verbal and nonverbal reactions of the class members to the transmission of the message in an effort to describe the dimensions of the affect domain. Prior to the actual task, the observers met to define areas of interest in an effort to provide some measure of interobserver reliability. The observations began 15 minutes prior to the beginning of the course, and ended five minutes after the close of the class. During that time, the researchers recorded their observations in five-minute intervals in order to provide a chronological dimension to the analysis. This data was then analyzed comparatively in order to extrapolate salient differences in the affective domains between the three observed groups.

## Results

Through the use of naturalistic observations, structured interviews, and the survey technique, accumulated data would seem to suggest that certain elements of the affect domain do indeed differ between the three observed settings. At this point, however, it must be stated that any findings as a result of this study should be considered as tentative conclusions which may serve as the focal point for future research. This study revealed affect differences in both verbal and nonverbal interactions between the observed groups. Specifically: (1) the way in which questions and comments were generated and utilized; (2) the presence of humor; (3) the entrance and leave taking behaviors; (4) the reaction of the observed groups to the content of the message; and (5) the focus of the attention of the observed groups.

### Questions and Comments

Probably the most obvious and arguably the most important discrepancy observed between the three groups was the way in which questions and comments were used by the students. The verbal interactions observed were originally documented by the researchers as being questions or comments; in addition, they were later classified as being topical or nontopical responses. Topical questions or responses dealt with the class material and represented attempts to clarify or understand the course information. Nontopical utterances dealt with material outside the scope of the class.

Within the category of topical questions, the face-to-face site generated 19 instances, the on-campus site generated only 3 instances, and the off-campus site generated 24 instances. The only instance of a nontopical question originated from the off-campus site.

In regards to the categories of topical and nontopical comments, there were diverse differences noted. Six instances of topical comments were revealed in the face-to-face environment, all of which were directed at the instructor. In the on-campus site, a mere three instances were observed. Finally, the off-campus site observer remarkably reported 54 instances of topical comments. Nontopical comments yielded similar differences between the three environments. The first site exhibited 11 instances, with eight of these being directed at the instructor. The second group offered three nontopical comments, while the final group registered eight.

Humor

The second area of difference observed between the three sites involved the presence of humor. Five specific humorous comments generated by the instructor were noted and tracked by the observers through each of the groups. The reactions and responses to the humor of the instructor varied, depending upon the particular group. Observations clearly demonstrated that response to the humorous message was much greater in the face-to-face site than in comparison to the other two sites. The face-to-face group members responded more spontaneously and naturally to the humor generated by the instructor than the other groups, and was the only group to respond with laughter at more subtle attempts. The off-campus site had less response to the humor of the instructor; however, they represented the greatest source of intragroup humor. The on-campus responded little to the instructor's humor and generated no humorous messages of their own.

Entrance and Leave-taking Behaviors

Another area of difference observed can be seen in the actions of entrance

and leave-taking behaviors. Intuitively, these findings paralleled the authors' expectations. In terms of the face-to-face environment there were three instances of late arrivals over the course of two class meetings. However, these late arrivals were within the first ten minutes of the class meeting; no early departures were noted. The on-campus site members showed less adherence to formal attendance procedures. Members were observed arriving as late as thirty minutes after the start of class, and departing as early as fifteen minutes into the class. Additionally, group members demonstrated little compulsion to remain seated for the entire class, as evidenced by the frequent comings-and-goings. The off-site campus paralleled traditional classroom decorum, arriving and departing at the appropriate times.

Reaction to Message

The observed responses to the instructor's message identifies yet another difference between the three groups. In one particular instance, while discussing peripheral vision, the instructor suggested a hand motion to illustrate his point. The reaction to his request differed between the three environments. All four students in the off-campus site actively demonstrated the hand motion as compared to the on-campus site,where only three of the 24 students responded. Only seven of 28 performed the gesture the face-to-face classroom.

Other instances of nonverbal reactions included yawns, stretches, head nods, and lack of facial expressions, which were observed in both mediated sites. The face-to-face site produced similar yet more covert nonverbal responses to the message. However, unique to the face-to-face environment was the action of raising one's hand to attract the instructors attention, an act that has as its only equivalent the use of the phones from the other two sites.

Focus of Attention

The final category in our analysis has been labeled 'focus of attention'. The authors followed the assumption that the majority of the student's attention will be focused on the medium of the message (the instructor for the face-to-face environment and the television for the other environments). This premise was substantiated for the most part, with the one observed exception to this assumption being the use of other group members' notes to confirm the accuracy of individual message reception.

Perhaps a more accurate description of this area might be 'lack of focus in general behavior'. The two mediated sites exhibited a number of behaviors that could be considered unacceptable in the presence of the instructor. For example, shuffling through books, playing with calculators, blowing bubbles, tapping pencils, and exchanging notes was observed in both on-campus and off-campus sites. The face-to-face environment, ostensibly due to the presence of the instructor, failed to demonstrate similar behaviors.

## Conclusions

There are a number of conclusions that can be deduced through the analysis of the data. Although it must be reiterated that the exploratory nature of this pilot study inhibits to some degree the power of these findings, the authors feel confident that some interpretations of the data can be reasonably supported.

It is evident through both the interviews and the questionnaire data that differences do exist in the affect domain among the sites. Perhaps the easiest method of demonstrating and/or characterizing each of these affective domains would be through the description of each of the atmospheres associated with the individual sites. For the sake of comparison, the authors will state their

perceptions regarding a representative description of the atmosphere of each individual site.

The face-to-face environment can be characterized as a traditional classroom environment with a few important exceptions. The population of the initial site seem to be somewhat constant; the members from week to week did not vary greatly. There seemed to be a fair amount of group identification between the group members; the overall perception of interaction between individuals seemed to be collective as opposed to dyadic in nature. One of the important differences between a traditional classroom setting and this particular setting was uncovered and substantiated through the questionnaires and interviews. Whereas some individuals claimed that the presence of the cameras was in no way inhibiting to the process of instruction, there were noted refutations of this particular position. It was made quite clear that some of the members of the group felt uncomfortable with asking questions or participating in discussions because of the presence of the cameras.

Another observation that can be made about this environment is that the prevalent feeling amidst the group members was that the learning process would be inhibited through the sole use of the monitors to acquire information. Given the choice, they would prefer to receive the information directly from the instructor rather than to receive the information through the mediated process.

The atmosphere of the on-campus group differed markedly from the face-to-face environment. The on-campus group can be characterized by the lack of internal affiliation. Results of the surveys support the contention that the members of this group fail to develop local peer support groups, have little feeling of contact with other students, and feel an absence of class participation. The atmosphere in this site can be best described as being highly individual in nature. Based on the observations and the interviews, it might be hypothesized

that the motivations for these individuals consist solely of academic requirements and concerns. It is interesting to note that those individuals who were surveyed indicated that the preferred instructional site was the face-to-face site, and were in the on-campus site for reasons of convenience, comfort, and habit.

In contrast to the on-campus group, the off-campus group which was observed exhibited high affiliation, involvement, and immediacy amongst themselves. One reason for this relationship might be that all the members of the group belong to the same organization, and thus promote group identification. Another reason for the immediacy factor may be due in part to the proxemics of the situation; the members must share a relatively small space for the duration of the class. Also, the class meeting is convenient for the off-campus group; the course is broadcast to their work site for their benefit. For some, due to family, financial or time constraints, the possibility for further education would not be present or would be more difficult without televised instruction.

## Future Implications

In summary, this exploratory study has established that differences do exist in the affect domain between face-to-face sites and mediated sites in ITV. The authors have also tentatively identified some of these possible areas of inquiry. Future research into this area needs to further substantiate these claims, as well as exploring for the possibility of other elements which differ between affect dimensions and affective learning outcomes. In terms of observational research, more stringent longitudinal studies need to be conducted in order to establish patterns of behavior with greater confidence. Better measures with which to analyze the affect domain in ITV need to be developed in order to link affective learning to cognitive learning.

The use of ITV has an enormous potential for influencing the future of

education. In order to maximize the effectiveness of the medium, the affective dimension must be studied with the same fervor as has the aspects of cognitive learning. This study has merely provided a brief glimpse into the myriad of possibilities to consider the importance of immediacy, affiliativeness, identification, and other related affective constructs; it is up to future research to lay the groundwork and establish the directions of future inquiry into the field of distance education.

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